Exemption No. 8350

UNITED STATES OF AMERICA
DEPARTMENT OF TRANSPORTATION
FEDERAL AVIATION ADMINISTRATION
RENTON, WASHINGTON 98055-4056

In the matter of the petition of **Israel Aircraft Industries, Ltd.** for an exemption from §§ 25.810(a)(1), 25.857(e), and 25.1447(c)(1) of Title 14, Code of Federal Regulations	**Regulatory Docket No. FAA-2004-16969**

GRANT OF EXEMPTION

By letters dated January 19, 2004, and February 17, 2004, Mr. Samuel Ifergan, Senior Director Quality Assurance, Bedek Aviation Group, Israel Aircraft Industries Ltd., LOD 70100, Israel, petitioned for an exemption from §§ 25.810(a)(1), 25.857(e), and 25.1447(c)(1) to allow carriage of three non-crewmembers (commonly referred to as supernumeraries) located aft of the flight deck on Boeing Model 767-200 airplanes which have been converted from a passenger to a freighter configuration.

The petitioner requests relief from the following regulations:

> **Section 25.810(a)(1)**, Amendment 25-88, requires that each non-overwing emergency exit more than 6 feet from the ground have an approved means to assist occupants in descending to the ground. For passenger exits, this must be a self-supporting, automatically deployed and erected slide at each applicable exit.
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> **Section 25.857(e)**, at Amendment 25-93, requires, in pertinent part, that when a Class E cargo compartment is installed on the airplane, the airplane is used for carriage of cargo only.

Section 25.1447(c)(1), at Amendment 25-87, requires, in pertinent part, that oxygen dispensing units must be automatically presented to the occupants before the cabin altitude exceeds 15,000 feet. The total number of dispensing units and outlets must exceed the number of seats by at least 10 percent. The extra units must be as uniformly distributed throughout the cabin as practicable. There must be at least two oxygen dispensing units connected to oxygen terminals in each lavatory.

Related sections of the regulations:

Section 121.583(a) contains, in pertinent part, a listing of categories of persons who may be carried aboard an airplane in part 121 service without complying with all the requirements of part 121 pertaining to carriage of passengers.

The petitioner supports his request with the following information:

"1) Introduction

"IAI has requested to certify (STC) a major modification of a B767-200 aircraft from passenger to a special freighter (SF) configuration. The program is being certified by the CAAI and then by the FAA validation process subject to the bilateral agreement between the US and the Israely governments. The project has been assigned the FAA project number ST7021SE-T.

"IAI is requesting to be granted in the STC an exemption from meeting certain requirements, as described below. The exemptions requested are all related to the carriage of three non-crewmembers (persons not necessarily assigned some duty associated with the operation of the airplane, commonly referred to as supernumeraries) in addition to the maximum existing flight deck occupancy (Two flight crew and two observers), with a limit on the total occupancy of seven. The exemption is requested for all B767 aircraft modified to freighter under the IAI STC.

"a. FAR 25 Affected Sections

"Section 25.810 Amdt 88 *Emergency Egress Assists Means* (a)(1) requires that for each passenger emergency exit there must be a self supporting slide or equivalent.

"Section 25.857 Amdt 93 *Cargo Compartment Classification* (e) requires, in pertinent part, that when a class E cargo compartment is defined on an airplane, the airplane is used for transport of cargo only.

"Section 25.1447 Amdt 87 *Equipment Standards for Oxygen Dispensing Units* (c)(1) requires that an oxygen dispensing unit is immediately available to each occupant whenever seated, and at least two oxygen dispensing units in each lavatory, and for operation above 30,000 ft oxygen dispensing units must be automatically presented to the occupants, before the cabin pressure altitude exceeds 15,000 ft, and further requires that the total number of dispensing units and outlets exceed the number of seats by at least 10 percent.

"Other related Sections of the FAR:

"Section 121.583(a) contains in pertinent part, a listing of categories of persons who may be carried on an airplane, without complying with all the passenger carrying airplane requirements of part 121.

"2 Description of the converted airplane configuration

"The Boeing B767-200 is a transport category airplane. The converted B767-200 Special Freighter airplane, will have an all cargo main deck configuration. In order to optimize the cargo missions, accommodation for three supernumerary persons is provided between the flight deck and the main deck class E compartment. All design criteria applicable to the carriage of passengers have been taken into consideration for the design of the supernumeraries area, the seating arrangement and the applicable systems. Protection from smoke and noxious gases is provided by a smoke barrier which isolate the main deck cargo compartment from the zone where the supernumerary persons are seated. A 9G crash net will be provided to protect the supernumerary persons and the crew in case of 9G crash landing. Two emergency exits – door 1L and 1R – remain operable, located one on each side of the fuselage. Escape devices (descend devices) are provided for all occupants – crew and supernumeraries. Existing flight deck oxygen supply system is already sized and provisioned for supply of oxygen to four flightdeck occupants – two crew and two observers. Additional separate oxygen cylinder and distribution system and oxygen masks are provided to supply oxygen to the three supernumeraries seated outside the flight deck in case of depressurization, for the necessary flight duration. The oxygen masks are located within reach of the seated supernumeraries. A portable oxygen cylinder and mask (11 Cu Ft) is installed near the three supernumeraries and provides a reserve source meeting the 10% excess number of masks required. In addition there is a portable oxygen cylinder in the lavatory instead of an oxygen generator. The occupants of the supernumerary seat will be instructed that oxygen masks need to be used by a chime and lighted signs located in front of them. Two-way communication with the flight deck is possible through

dedicated communication panel located close to the supernumeraries seat. Emergency equipment is provided as required by the Airworthiness Standards. Conditioned air is supplied to the supernumeraries area by a branch from the flight deck air conditioning supply duct.

"3 Requested exemption

"Section 25.857(e) : Relief is requested to permit carriage of three supernumerary persons on all-freighter aircraft with class E cargo compartment.

"Section 25.810(a)(1) : An exemption is requested to allow usage of Escape devices (descend devices) in compliance with 25.810(a)(2) for supernumeraries instead of the slides required by (a)(1). The escape devices are the same for the crewmembers.

"Section 25.1447(c)(1) : An oxygen dispensing unit is provided and readily available to every seated occupant. A relief is requested from automatic presentation of the masks to the supernumeraries upon cabin pressure altitude above 15000 Ft. Instead, the supernumeraries will be alerted about the need for use of oxygen via a lighted sign and a chime sound on passenger address system. The sign and chime will activate automatically on cabin pressure altitude above 15000 Ft. A sign with an alerting light and an address system loudspeaker will be provided also in the lavatory.

"4) Supporting Arguments

"a) The cargo operators need for their missions a number of support personnel, necessary for the safe handling of the cargo in the process of loading and unloading. Such personnel are obviously needed for both, the departure and the destination of the cargo flights. It is important that the cargo handlers are presented upon airplane arrival if perishable goods or live animals are carried. The most efficient way to assure their attendance at destination airport is to transport them aboard the cargo flight.
"b) The cargo operators may have to carry particular kinds of cargo, such as live animals, hazardous materials, valuable or perishable goods. Such cargo in many cases cannot be left unattended, even for the duration of the flight and the presence of personnel qualified in their handling is necessary on the airplane on which they are carried. Safety and efficiency of the operation will (be) therefore be enhanced.
"c) Cargo operators also need to have qualified personnel necessary for operation and maintenance purposes at various locations. They will optimize their missions if they are permitted to carry such personnel aboard their cargo flights as they may not be available at the various fields serviced by the cargo flight.

"d) The categories of the supernumerary persons for which this exemption is requested are defined on FAR Section 121.583(a), they are trained as to the autonomous use oxygen masks, emergency equipment and emergency exit operation. It will also be required that the operator allows access to the supernumeraries seats only to persons found able to perform these tasks on their own.
"e) The requirements of section 25.1447(c)(1) to have the oxygen dispensing units automatically presented to occupants before the cabin pressure altitude exceeds 15,000 ft are compensated by the fact that the trained supernumeraries will have the knowledge of equipment location and use and will be alerted automatically by light and chime to use the equipment when necessary. In addition they can be alerted via PA vocally. The provided masks are quick donning masks with regulator and are simple to use and immediately available to seated occupants.
"f) The requested exemptions do not reduce cabin safety as they provide the necessary safety level by equivalent means.

"5) Public Interest
"The granting of the requested exemption will be in the public interest, as by allowing the carriage of the supernumerary persons aboard the cargo flights the operators will be able to optimize the safety conditions of the cargo operation, to make the operation more efficient and to improve the utility of the airplanes and the airports."

A summary of this petition was not published in the Federal Register for public comment because the nature of this exemption is similar to those of previous petitions for which no public comments were received.

The FAA's analysis/summary is as follows:

The certification regulations for transport category airplanes address airplane occupants as being either "crew" or "passengers." Due to differences in training, physical capabilities, and other factors (such as familiarity with the airplane), the means required by part 25 to address emergency evacuation and emergency equipment differ for passengers and crew members.

Because supernumeraries are not crew members, they must be considered "passengers" by default, with respect to part 25. However, supernumeraries do hold a special status because of their training and other factors. The FAA, therefore, has granted certain exemptions to allow the carriage of supernumeraries on cargo airplanes without compliance with all of the part 25 standards for passengers, provided that certain other conditions are met. Those conditions have varied, depending on the airplane design, the nature of the proposal under consideration, and the number and location of persons to be carried.

The petitioner has requested relief from the requirements of § 25.857(e), which permits carriage of only cargo when a Class E cargo compartment is installed on the airplane. Class E cargo compartments are usually remote from the flightdeck and encompass the entire interior of the airplane. The means of controlling fires that might occur in the cargo compartment is to starve the fire of oxygen. Depressurizing the airplane and maintaining an altitude that will not support combustion accomplish this. For this reason, only crewmembers are permitted on board such airplanes. The three supernumeraries will be located just aft of the flightdeck.

Due to the way that fire in the cargo compartment is to be controlled, it is necessary to limit supernumeraries on board the airplane to those who have been found physically fit by the operator and have been briefed on the use of emergency equipment. This limitation on the supernumeraries is consistent with previous approvals and will be included in this exemption. Also, there must be suitable means of preventing smoke penetration into areas that are occupied. The petitioner's design accounts for this by providing a smoke barrier for the supernumeraries located aft of the flightdeck, which must comply with the smoke penetration requirements.

The petitioner has requested relief from the requirements of § 25.810(a)(1), which requires the passenger emergency exits to be equipped with a self-supporting slide or equivalent assist means. The petitioner has proposed to install descent devices (commonly known as inertia reels) at the two emergency exits, door 1L and 1R.

The issue of whether inertia reels with harnesses for trained supernumeraries provide an acceptable alternative to the escape slides required by part 25 for passengers is discussed in some length in Exemptions No. 4808 and 4808A. (The FAA granted those exemptions to the Boeing Commercial Airplane Group in 1987 and 1997, respectively.) This issue is also discussed in Exemption No. 5993A, which the FAA granted in 1995 to the Boeing Commercial Airplane Group for Boeing 767-300PF airplanes.

The FAA recognizes that supernumeraries, as opposed to passengers, may be selected and trained appropriately in the use of escape ropes and inertia reels and harnesses. The FAA considers that the petitioner's proposed installation of inertia reels and harnesses at two emergency exits (doors 1L and 1R) provides an adequate level of safety to supernumeraries for the petitioner's airplane configuration.

The petitioner has requested relief from the requirements of § 25.1447(c)(1). As mentioned above, supernumeraries are considered passengers in regard to part 25. But, taking into account the extra knowledge and training that supernumeraries will have, the FAA does not find that an equivalent system needs to be provided.

The petitioner has proposed a separate oxygen supply and distribution system for the three supernumeraries located just aft of the flightdeck. The masks for the three supernumeraries would not be automatically presented but would be within easy reach of the seated supernumeraries. Also, the petitioner has proposed that the oxygen system within the lavatory be a portable oxygen cylinder and mask that would not be automatically presented. Section 25.1447(c)(1) requires automatic presentation of the oxygen dispensing units. For both the three supernumerary seats and the lavatory located aft of the flight deck, an aural and visual indication would be provided when oxygen masks should be donned. Additionally, the supernumeraries must be trained in the location and use of the oxygen equipment in order to provide them an appropriate level of safety. The FAA considers this to be sufficient. Note that oxygen units must be sized adequately for continuous and uninterrupted use during worst-case flight duration following decompression.

Section 25.1447(c)(1) requires that there be ten percent more oxygen masks than occupants. The FAA considers that the rationale behind this requirement does not apply in this case.

The scope of this evaluation does not include consideration of supernumeraries entering the cargo compartment aft of the 9g (9 times the force of gravity) crash net during flight. Such access would require additional limitations to provide an appropriate level of safety to the supernumeraries. An airplane flight manual (AFM) limitation must be established that prohibits supernumeraries from being in the Class E compartment aft of the net during flight.

In consideration of the foregoing, I find that a grant of exemption is in the public interest and will not affect the level of safety provided by the regulations. Therefore, pursuant to the authority contained in 49 U.S.C. 40113 and 44701, delegated to me by the Administrator, Israel Aircraft Industries Ltd. is hereby granted an exemption from §§ 25.810(a)(1) Amendment 25-88, 25.857(e) Amendment 25-93, and 25.1447(c)(1) Amendment 25-87. The petition is granted to the extent required to permit type certification of Boeing Model 767-200 airplanes which have been converted from a passenger to a freighter configuration with provisions for the carriage of supernumeraries. The following limitations apply and limitations 1 through 5 must be documented in the limitations section of the airplane flight manual:

1. A maximum of three supernumeraries may occupy the area just aft of the flightdeck. The total maximum occupancy of the airplane is limited to seven persons including the flightcrew.

2. Supernumeraries are limited to the categories specified in § 121.583(a)(1) through (a)(7).

3. Prior to each flight, a flight crewmember must brief each supernumerary on the use of the exits and emergency equipment, including instructions to inspect the ground to determine whether a safe landing can be achieved before using an assist means.

4. The operator must determine that each supernumerary is physically able to accomplish the necessary emergency procedures.

5. Supernumeraries are prohibited from being in the cargo area aft of the smoke barrier during flight. The preflight briefing must inform supernumeraries of this requirement.

6. For the exits designated for supernumerary use, emergency lighting must provide adequate illumination at the ground end of the assist means, where an evacuee would normally make first contact with the ground, with the airplane in each of the attitudes corresponding to the collapse of one or more legs of the landing gear.

7. For the exits designated for supernumerary use, seven descent devices (commonly know as inertia reels) and three harnesses for use with the descent devices, available for the supernumeraries to use, must be provided.

Issued in Renton, Washington, on June 28, 2004.

/s/Ali Bahrami
Ali Bahrami
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